



# Doing What Works

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**Video**

FULL DETAILS AND TRANSCRIPT

## Science Activities That Engage Girls

Clarke N. Johnsen Junior High School, Utah • November 2007

**Topic:** Encouraging Girls in Math and Science  
**Practice:** Sparking Curiosity

### Highlights

- Science isn't always fun to read, and middle school students sometimes struggle with informational text, so non-traditional teaching methods can be useful.
- Throwing a Frisbee is a physics demonstration; dying Barbie's hair is a chemistry experiment.
- Sometimes girls come back ten years later and reminisce about an activity or project that captivated them and sent them down a science-oriented career path, changing their life.

### About the Site

**Clarke N. Johnsen Junior High School**  
**Tooele, UT**

### Demographics

83% Caucasian, 12% Hispanic, 2% African American, 1% Asian, 2% American Indian  
35% free and reduced price lunch  
51% female students

In Clarke N. Johnsen Junior High School teachers and school administrators collaborate to encourage girls in science. The approach taken by the school includes:

- Teachers serve as role models and deliberately discuss their own education, experiences, and interests as scientists
- Female scientists invited as speakers and to model science activities
- Active recruitment of girls to participate in regional events promoting women in science
- Innovative lesson plans that draw on girls' experiences and interests and involve all students using techniques such as group projects and open-ended exploration
- Science teachers work with students to develop career interests that are not gender biased

## Full Transcript

Speaker:

The very first thing we do, the very first day of school is I give them our three topics, and 8th grade core is geology, physics and chemistry. And they have to write down everything they know about those three things. Geology I get "earth and rocks" out of them. Some of the girls, when they see physics, they automatically hear that word and panic because they think we're going to build a space shuttle, or they don't understand that it's also hitting a ball beyond the first baseman. That that's physics and everything that they do is physics.

So we work a lot—I work a lot at breaking that down because I do get some, "Oh, I've never been good at science," or, "I don't like science." I think that's why we try to do some non-traditional teaching methods, so it's not, "Here's a book," because science isn't really fun to read. It's very dry. Informational text is very tough for this age to get. So we try to do some non-traditional teaching to get them to understand this is science. We are doing science. You are learning physics if we are out here playing Frisbee.

Speaker:

The thing that we're really good at as a science department here is we have a lot of eye catching activities that we're either—there are either demonstrations at the beginning of our class period or there are labs, or different things that—and we're letting the material teach itself. Like, I just did a lab with my Honors kids, and all I did was come up with the materials. And I had the materials there and I just said, "Okay, do Double Stuffed Oreos really have double the stuff?" And that's all I said and then they had to - and I had Double Stuffed Oreos and regular Oreos and I just said, "Go for it." And by the end, everybody had an answer.

I mean, they had their hypothesis, you know, and they went through the whole experiment, and everybody had an experiment by the end. And I had people doing tons of different things. I had people using scales, I had people using rulers, and I had people licking (laugh)—tons of different things. And that's what's so great about it is there's no right way.

Speaker:

I have them bring in Barbies, old discarded Barbies, and we change the color of Barbie's hair. I give them very few directions, so some will turn out well and others will not turn out well. So they can see that too much exposure to chemicals—and that it's all chemistry. That all that takes place, it's all chemistry. And the girls kind of, "Oh, I didn't know hairdressers did chemistry." So it kind of hits it home for them a little bit more.

Speaker:

At the end of the year when we do classification, I have the students design a mall. And the girls really like it because they like to shop, and they know all about malls and how they're designed. And so they design their mall and how they would—and then how they would organize their store. They pick a store that they want and the name it, and they organize it, which then we later talking about how they classified things based on—you know—the size, what kind of items they're selling. So they really get into it. And some of them get really creative, and they make signs, and they make the floorplan and— They really seem to like that one.

Speaker:

We do the Science Fair, and most of us require it. We haven't started it yet this year. We'll be starting it here in a couple of weeks. I had my Honors class last year, and they just were stuck, "What can we do? What can we do?" And there were these three girls together, and we were throwing out ideas, and I said, "Why don't you do something that has to do with your hair?" "Well, like what?" And I said, "Well, yours is really curly and yours is poker straight, so what could you do with that?"

And they brought up the flat iron, and I've never used a flat iron, so I don't know how they work. And they had four different flat irons from \$4.00 to \$34.00, and they did an entire Science Fair project. They got 15 of their friends and did them all for the same amount of time, but to see which iron best straightened. And they had a Polynesian gal, an African-American gal, poker straight hair, blonde hair. They had a myriad of "victims," they referred to them as, and they did the test. And they collected so much information, and they had no idea that this was considered science—that it was a legitimate science fair project. And I explained to them, "Companies do this all the time to figure out marketing and science research." So it was very much science, and they had a great time with it. And they went on to the Regional Science Fair with that one.

Speaker:

When we had Engineering Day, the girls were very excited about tearing the old VCRs and toasters apart. And they were even more excited to find out that there was a computer chip inside the toaster. First of all, they loved the tools of just getting in there and tearing everything apart. And then they really loved the fact that, "Oh look, there's a computer chip in the toaster." Like, I didn't even know that.

Speaker:

We were dissecting fetal pigs, and it was towards the end of the year in 7th grade Life Science. And one of the students—the girls, her name is Ashley—she said, "Um, would it be okay if I cut in through the skull?" So Dr. Gowns went over and helped her out, and she was enthralled with this. And at the end of class she was like, "I so want to go into medicine now! This is the coolest thing!" And really smart girl, not very into school—not very motivated at all. And I found out this year—I have her little brother, and she's taking AP Chemistry this year. So I was very excited about that. I was like, "Okay, good."

Speaker:

I like when the girls come back to you ten years later and they're talking about, "Remember when we did this activity or this project?" And I really don't remember but they did, and it really enthused them, and they ran with it, and they made their whole career—their whole life out of it. And it's nice when they come back and tell you these things.